CLAIMS:

1. A method for efficiently communicating timeout messages in a bridged network having a plurality of nodes located on a plurality of buses coupled together by at least one bridge, said method comprising:

determining by a portal , upon said portal receiving a TIMEOUT request message for a destination bus of the plurality of buses, whether a set of remote timeout values associated with said destination bus is known; and

synthesizing a TIMEOUT response message by the portal, if the set of remote timeout values is known.

2. The method according to claim 1, wherein said synthesizing includes adding a known remote timeout seconds value from a local bus of the plurality of buses associated with said portal to the destination bus to a received remote timeout seconds value in the TIMEOUT request message.

3. The method according to claim 2, wherein said synthesizing further comprises employing a sum from said adding as a remote timeout seconds response value in the TIMEOUT response message.

4. The method according to claim 1, wherein said synthesizing further includes:

comparing a known maximum remote payload value for the destination bus from a local bus of the plurality of buses associated with said portal with a received maximum remote payload value in said TIMEOUT request message.

5. The method according to claim 4, wherein said synthesizing further comprises employing a smaller of the two compared values as a maximum remote payload response value in the TIMEOUT response message.

6. The method according to claim 1, wherein said synthesizing further comprises adding a known hop count to the destination bus from the local bus associated with said portal to a received hop count value in the TIMEOUT request message.

7. The method according to claim 6, wherein said synthesizing further comprises employing a sum from said adding as a hop count response value in the TIMEOUT response message.

8. The method according to claim 1, further comprising, if the remote timeout value is not known:

storing a set of received remote timeout values (T_0, P_0, and C_0) for the destination bus with a valid_flag cleared, wherein T_0 is a received remote timeout seconds value, P_0 is a received maximum remote payload value, and C_0 is a received hop count value.

9. The method according to claim 8, further comprising:

determining a first new set of remote timeout values, including:

(1) a first new remote timeout seconds value, which is equal to the received remote timeout value (T_0) plus a first constant (T_x);

(2) a first new maximum remote payload value, which is equal to a second constant (P_x); and

(3) a first new hop count value, which is equal to the received hop count value (C_0) plus one, wherein said first constant (T_x) is a sum of: (a) a maximum forward time for request subactions from said portal to a next portal of a next bridge , and (b) a maximum forward time for response subactions from a co-portal associated with said portal to either said next portal of the next bridge or a requester node of the plurality of nodes; and said second constant (P_x) is a maximum data payload that can be forwarded from said portal to said next portal of the next bridge .

10. The method according to claim 9, further comprising forwarding the first new set of remote timeout values in a revised timeout request message.

11. The method according to claim 10, further comprising:

intercepting by said portal a corresponding TIMEOUT response message from the destination bus to the source bus, wherein said corresponding TIMEOUT response message corresponds to the revised timeout request message.

12. The method according to claim 11, further comprising:

determining a second new set of remote timeout values, including:

(1) a second new remote timeout seconds value, which equals a received remote timeout seconds response value (T_y) less the received remote timeout seconds value (T_0);

(2) a second new maximum payload value, which equals a received maximum payload response value (P_y); and

(3) a second new hop count value, which equals a received hop count response value (C_y) less a received hop count value (C_0), wherein said received remote timeout seconds response value, said received maximum payload response value, and said received hop count response value are included in the intercepted corresponding TIMEOUT response message; and

storing said second new set of remote timeout values along with a flag indicating the stored second new set of remote timeout values is valid.

13. The method according to claim 12, further comprising:

determining a third new set of remote timeout values, including:

(1) a third new remote timeout seconds value, which equals the received remote timeout seconds response value (T_y);

(2) a third new maximum remote payload value, which equals a lesser of the received maximum remote payload value (P_y) and the received maximum payload value (P_0); and

(3) a third new hop count value, which equals the received hop count response value (C_y).

14. The method according to claim 13, further comprising forwarding the third new set of remote timeout values as part of a TIMEOUT response message towards the source bus.

15. The method according to claim 8, further comprising:

determining a first new set of remote timeout values, including:

(1) a first new remote timeout seconds value, which is equal to the received remote timeout seconds value (T_0) plus a first constant (T_x);

(2) a first new maximum remote payload value, which is equal to a second constant (0xFFFF); and

(3) a first new hop count value, which is equal to the received hop count value (C_0) plus one, wherein said first constant (T_x) is a sum of: (a) a maximum forward time for request subactions from said portal to a next portal of a next bridge , and (b) a maximum forward time for response subactions from a co-portal associated with said portal to either said next portal of the next bridge or a requester node of the plurality of nodes; and said second constant (0xFFFF) is a maximum value for the maximum remote payload.

16. The method according to claim 15, further comprising forwarding the first new set of remote timeout values in a revised timeout request message.

17. The method according to claim 16, further comprising:

intercepting by said portal a corresponding TIMEOUT response message from the destination bus to the source bus, wherein said corresponding TIMEOUT response message corresponds to the revised timeout request message.

18. The method according to claim 17, further comprising:

determining a second new set of remote timeout values, including:

(1) a second new remote timeout seconds value, which equals a received remote timeout seconds response value (T_y) less the received remote timeout seconds value (T_0);

(2) a second new maximum payload value, which equals a lesser of a received maximum payload response value (P_y) and a maximum data payload (P_x) that can be forwarded from said portal to said next portal of the next bridge; and

(3) a second new hop count value, which equals a received hop count response value (C_y) less a received hop count value (C_0), wherein said received remote timeout seconds response value, said received maximum payload response value, and said received

hop count response value are included in the intercepted corresponding TIMEOUT response message; and

storing said second new set of remote timeout values along with a flag indicating the stored second new set of remote timeout values is valid.

19. The method according to claim 18, further comprising:

determining a third new set of remote timeout values, including:

(1) a third new remote timeout seconds value, which equals the received remote timeout seconds response value (T_y);

(2) a third new maximum remote payload value, which equals a lesser of the received maximum remote payload value (P_y), the received maximum payload value (P_0), and the maximum data payload (P_x) that can be forwarded from said portal to said next portal of the next bridge; and

(3) a third new hop count value, which equals the received hop count response value (C_y).

20. The method according to claim 21, further comprising forwarding the third new set of remote timeout values as part of a TIMEOUT response message towards the source bus.

21. A method for communicating in a network having a plurality of nodes located on a plurality of buses coupled together by at least one bridge , said method comprising:

determining by each portal, upon said portal receiving a TIMEOUT request message for a destination bus of the plurality of buses, whether a set of remote timeout values associated with said destination bus is known; and

synthesizing a TIMEOUT response message by said each portal, if the set of remote timeout values is known.

22. The method according to claim 21, wherein said synthesizing includes adding a known remote timeout seconds value from a local bus of the plurality of buses associated with said portal to the destination bus to a received remote timeout seconds value in the TIMEOUT request message.

23. The method according to claim 22, wherein said synthesizing further comprises employing a sum from said adding as a remote timeout seconds response value in the TIMEOUT response message.

24. The method according to claim 21, wherein said synthesizing further includes:

comparing a known maximum remote payload value for the destination bus from a local bus of the plurality of buses associated with said portal with a received maximum remote payload value in said TIMEOUT request message.

25. The method according to claim 24, wherein said synthesizing further comprises employing a smaller of the two compared values as a maximum remote payload response value in the TIMEOUT response message.

26. The method according to claim 21, wherein said synthesizing further comprises adding a known hop count to the destination bus from the local bus associated with said portal to a received hop count value in the TIMEOUT request message.

27. The method according to claim 26, wherein said synthesizing further comprises employing a sum from said adding as a hop count response value in the TIMEOUT response message.

28. The method according to claim 21, further comprising, if the set of remote timeout values is not known, forwarding the timeout request message without modifying a received set of remote timeout values included in the timeout request message.

29. The method according to claim 28, further comprising:

receiving by a portal a TIMEOUT response message from the destination bus to the source bus, wherein said TIMEOUT response message includes a received set of remote timeout response values.

30. The method according to claim 29, further comprising:

determining a first new set of remote timeout values, including:

(1) a first new remote seconds timeout value, which equals a received remote timeout seconds response value (T_y) plus a first constant (T_x);

(2) a second new maximum payload value, which equals a lesser of a received maximum payload response value (P_y) and a maximum data payload (P_x) that can be forwarded from said portal to said next portal of the next bridge; and

(3) a second new hop count value, which equals a received hop count response value (C_y) plus one, wherein said received remote timeout seconds response value, said received maximum payload response value, and said received hop count response value are included in the received TIMEOUT response message; and

storing said first new set of remote timeout values along with a flag indicating the stored second new set of remote timeout values is valid.

31. The method according to claim 30, further comprising:

forwarding the second new set of remote timeout values as part of a TIMEOUT response message towards the source bus.

32. A serial bus bridged network having a reduced-response timeout management system, comprising

a source bus having at least one network node;

an intermediate bus having at least one network node;

a first bridge coupling the source bus to the intermediate bus, said first bridge including a first portal and a second portal;

a destination bus having at least one network node;

a second bridge coupling the intermediate bus to the destination bus, said second bridge including a first portal and a second portal, each of said first portals and said second portals in the first and second bridges including a register table to store a set of remote timeout values for the destination bus and a flag indicating a status of the stored set of remote timeout values;

each of said portals checking, upon receiving a timeout request message for the destination bus, said flag to determine if the stored set of remote timeout values is valid;

each of said portals generating a timeout response message, using said set of stored set of remote timeout values, in response to the timeout request message to the source bus, if the flag indicates the stored set of remote timeout values is valid.

33. The network according to claim 32, wherein each of said portals passes the received timeout request message with the received set of remote timeout values to a next portal or a destination bus if the flag indicates the stored set of remote timeout values is not valid.

34. The network according to claim 32, wherein each of said first and second portals updates, upon receiving a timeout response message for the source bus, said set of stored remote timeout values using a set of received remote timeout response values included in the received timeout response message.

35. The network according to claim 34, wherein each of said first and second portals forwards towards the source bus a revised timeout response message using the updated set of remote timeout values.

36. The network according to claim 33, wherein the set of remote timeout values includes a remote timeout seconds value, a maximum payload value and a hop count value.

37. The network according to claim 34, wherein each of the first and second portals updates the set of remote timeout values by:

adding a first constant to a received remote timeout response value;

choosing a lesser of a received maximum payload value and a maximum data payload that can be forwarded from a first portal associated with said second portal to a next portal of a next bridge; and

increasing a received hop count response value by one.

38. The network according to claim 37, wherein the first constant is a sum of: (a) a maximum forward time for request subactions from a second portal associated with said first portal to a next portal of a next bridge , and (b) a maximum

forward time for response subactions from a first portal associated with said second portal to either of said first or second portals of the next bridge.